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CHAPTER III

PRICE MOVEMENTS AND RELATED ECONOMIC CHANGES DURING RECESSION AND DEPRESSION

THE price decline precipitated in 1929 was of major proportions, world-wide in scope, and affected directly or indirectly virtually every element of the economic system. The fundamental relations between primary producers, manufacturers and distributors and final consumers which have concerned us in the preceding pages were profoundly altered, and these changes were reflected widely in the physical operations of production and exchange and in the living standards of different producing groups. In defining certain of these changes, and in tracing their consequences, we deal first with groups engaged in the extraction and production of raw materials.

PRIMARY PRODUCTS IN THE PRICE RECESSION

As a background for the survey of the recession we have traced some of the changes occurring in earlier years. The steady pre-War improvement in the status of primary producers was followed by a brief period of exceptional prosperity during the War. The recession of 1920–21 brought heavy losses to these producers, in both unit prices and aggregate rewards. The situation in the United States, in this respect, was but a phase of a world-wide schism between the prices of raw materials and manufactured goods. Between 1922 and 1929 there was definite and steady improvement in the position of raw material producers. On a per unit basis

some price disadvantage persisted, but there is evidence that substantial reductions in unit costs of production were effected in extractive industries generally and in non-ferrous metals particularly. Where such reductions occurred prosperity could exist without full restoration of an earlier price parity with commodities in general. For agricultural producers in the United States pre-War parity with non-agricultural prices was barely attained by 1929. Indeed, if farm prices be compared with the prices paid by farmers, at retail, some disparity still existed in 1929.

The price record of the recession is familiar. Raw materials dropped precipitately; manufactured goods, customarily slug-

	WHOLESALE PRICES		PER UNIT PURCHASING POWER (*July 1929=100*)
	July 1929[1]	*February 1933*	*February 1933*
All commodities	100	62	100
Raw materials	100	51	82
Manufactured goods[2]	100	69	111

[1] July 1929 is taken as the base, since that month marked the high point of general prices immediately before the recession. For some purposes it might be desirable to use a broader base, covering the prosperity phase of the cyclical swing preceding the 1929 recession. That the present comparisons would be modified only slightly by such a shift is indicated by the following comparison of the standing of index numbers of wholesale prices at the two periods. The classification, which is that of the U. S. Bureau of Labor Statistics, is three-fold rather than two-fold as in the text, but the relative price movements among raw and processed goods are clearly shown.

	October 1928–July 1929	*July 1929*
All commodities	100.0	100.7
Raw materials	100.0	101.6
Semi-manufactured products	100.0	99.2
Finished products	100.0	100.4

[2] This index of the average prices of manufactured products is based upon the quoted prices on standard goods. As will appear in a later section, the average prices actually realized by the manufacturer showed a greater decline from 1929 to 1933. A shifting to goods of lower quality and some under-cutting of quoted prices during the worst months of the depression were factors in this divergence of quoted and realized prices.

gish in their response to a downward pressure of values, lagged behind. The degree of difference is indicated by the index numbers on page 96. In wholesale markets raw materials declined approximately one-half in forty-three months. Since this decline exceeded materially the drop in general prices at wholesale, it meant a substantial loss in real per unit values, that is, values in exchange for commodities in general in wholesale markets. On the average, each unit of raw materials lost approximately 18 per cent in 'purchasing power', as thus defined; the corresponding gain in per unit purchasing power of manufactured goods was 11 per cent.[1]

That the weight of price recession should fall more heavily on producers of raw materials than on fabricators is to be expected, in the light of the preceding discussion of the nature of the price problems faced by these two producing

1 For convenience, in discussing price disparities, it is desirable to trace changes in purchasing power as well as changes in current prices. A commodity that rises in price less rapidly than the general average during a period of rising prices or falls more rapidly during a period of declining prices loses in purchasing power, per unit. Unless the loss is compensated by increases in the number of units sold, producers of that commodity will suffer a loss of aggregate purchasing power. The reverse is true of a commodity that rises in price more rapidly than the general average during a period of price advance or falls in price less rapidly during a period of price decline. It is through such changes in aggregate purchasing power that the economic center of gravity shifts from time to time, as economic power passes from group to group. Per unit purchasing power is, of course, just one element of the aggregate; changes in volume of output or sales may play an important part in the shifts of economic power; various cost factors enter, when the purchasing power of net income is in question. But during periods of rapid price movement, changes in the price factor may dominate changes in both net and gross income, and in the purchasing power of such income.

In the present account we shall in general define per unit purchasing power in terms of the broad list of commodities that enter into the general index of wholesale prices. That is, the index of price changes for a given commodity group will be divided by the index of change during the same period in the level of wholesale prices. In certain instances (notably in this chapter) purchasing power is measured with reference to other standards, but when this is done the standards of reference are specifically noted.

groups. In 1929 the general sensitiveness of raw material prices to the forces of recession was enhanced by certain exceptional conditions growing out of War and post-War developments. A clue to the price behavior of goods of these two types during the recession is found in the record of production changes. Annual index numbers of correspond-

	VOLUME OF PRODUCTION				AVERAGE WHOLESALE PRICES			
	1929	*1930*	*1931*	*1932*	*1929*	*1930*	*1931*	*1932*
Raw materials	100	97	97	88	100	87	69	57
Manufactured goods	100	85	75	61	100	93	81	74

ing price and production movements in the United States reveal a clear inverse relationship. Sharply reduced output and relatively well-maintained prices characterized manufactured goods over this period of recession. Maintained production and severe price decline marked the behavior of raw materials. The pronounced difference in the two records goes back, of course, to the conditions of production and the character of competition prevailing among producers of the two types. Control over output and ready adaptability to changed conditions of demand are found, in general, in manufacturing industries, while the reverse is true of extractive industries. The differing price records reflect these conditions, as well as the influence of special price-determining forces.

The declines in prices and in purchasing power were by no means equal, among the various classes of raw materials. The nature of the changes in four major commodity groups is shown by the index numbers below. Agricultural pro-

	WHOLESALE PRICES		PER UNIT PURCHASING POWER (*July 1929=100*)
RAW PRODUCTS	*July 1929*	*February 1933*	*February 1933*
Crops	100	40	65
Animal	100	39	63
Forest	100	63	102
Mineral	100	73	118

ducers suffered most severely; raw crops and animal products lost no less than 35 per cent in per unit purchasing power. Raw forest products, which suffered a price decline about equal to that of general prices, lost nothing in purchasing power. Raw mineral products gained 18 per cent in per unit worth. In the United States the critical problem of price disparity, as between raw materials and manufactured goods, centered in agricultural products.

These price changes accompanied and reflected important changes in the conditions of supply, as well as of demand. To facilitate comparison of certain of these movements we bring together below annual data relating to production and price

	VOLUME OF PRODUCTION				AVERAGE WHOLESALE PRICES			
RAW PRODUCTS	*1929*	*1930*	*1931*	*1932*	*1929*	*1930*	*1931*	*1932*
Mineral	100	89	75	62	100	93	81	78
Forest	100	82	57	38	100	90	78	66
Agricultural	100	100	106	99	100	85	64	48

changes during the years of recession. We find here a general inverse relationship between movements of prices and of output. The most severe price declines occurred among agricultural products, the production of which was maintained close to the pre-recession level. The effects on the market of this maintenance of production were aggravated by a sharp decline in agricultural exports. For the crop year 1932–33 such exports were some 27 per cent smaller in quantity than in 1928–29. Mineral products, the output of which was more severely reduced, experienced a smaller price decline; forest products suffered heavily in both output and price.[2]

[2] Just as the index numbers relating to all raw materials conceal the important differences revealed by the three sets of group measurements given above, so each of these hides divergent movements among its subordinate elements. Among raw mineral products the output of fuels was relatively well maintained, while the production of metals dropped to a very low level. Among forest products the drop in output of pulpwood, turpentine

PRICES AND PURCHASING POWER OF FARM PRODUCTS

Agriculture calls for chief attention, in a detailed survey of the price schism opened by the recession. The difficulties of agricultural producers during this period have been notorious. The accompanying index numbers define their relative position at the low point of the depression. While

	WHOLESALE PRICES		PER UNIT PURCHASING POWER (*July 1929=100*)
	July 1929[1]	*February 1933*	*February 1933*
All commodities	100	62	100
Products of American farms, raw	100	40	64
All other products, raw and processed (including processed products of American farms)	100	68	110
Products of American farms, raw			
Producers' goods	100	37	59
Consumers' goods	100	47	76

[1] The use of a broader pre-recession base would lower somewhat the index numbers of farm prices for the period of depression. In July 1929 the index number of farm prices was some 3 per cent above the average for the preceding ten months, while the index of wholesale prices for all commodities other than farm products and foods was one-half of one per cent below the average for that period.

general commodities at wholesale were declining 38 per cent the wholesale prices of raw American farm products were dropping 60 per cent, with a loss of no less than 36 per cent in per unit purchasing power in wholesale markets.[3] If we

and rosin was much less severe than in lumber. Among agricultural products no striking differences appear, over the period 1929–32 as a whole. Perhaps most significant is the increased output of fruits and vegetables. The several production index numbers for the subordinate groups are given in Appendix VII.

[3] The price and purchasing power changes here measured are those taking place between July 1929 and February 1933, the dates of the high and low points of general wholesale prices. If interest attaches to changes in the

lump together all other products (including farm products in processed form) we find a drop of but 32 per cent in average price, a gain of 10 per cent in average per unit purchasing power, at wholesale.

The records of average price change for farm crops and animal products, in raw state, show no differences. If, however, we distinguish farm products ready for consumption in raw state (garden truck, milk, potatoes, eggs, etc.) from those subject to processing before use, we find a considerable difference in price behavior. While raw consumers' goods, among farm products, lost 24 per cent in average per unit purchasing power, raw producers' goods lost 41 per cent. We find here an example of a common rule, that price vicissitudes, both falling and rising, are greater among producers' than among consumers' goods.

A comparison of the situation at the depression low with that of pre-War days is possible by means of the following index numbers.[4] The results of price decline during the first

	PER UNIT PURCHASING POWER, AT WHOLESALE			
	1913	*1922*	*July 1929*	*February 1933*
Products of American farms, raw	100	92	102	66
All other products	100	102	100	110
Crops, raw [1]	100	91	102	66
Animal products, raw [1]	100	89	98	62
Products of American farms, raw				
Producers' goods	100	88	99	59
Consumers' goods	100	105	112	85

[1] These index numbers include all raw crops and raw animal products, of American and foreign origin. The index numbers in the preceding table included only products of American farms.

(*Footnote* [3] *concluded*)
actual purchasing power of farmers these are not the most significant dates, for account should be taken of the seasonal marketings of farmers. Changes in the aggregate purchasing power of different economic groups during the recession are discussed in later sections.

[4] The price indexes from which these measurements of purchasing power changes are derived are given in Appendices III and IV.

post-War recession, which by 1921 had carried raw American farm products 18 per cent below their pre-War exchange parity with other commodities and which left them in 1922 with an 8 per cent disparity, were slowly corrected. By July 1929 the position of raw farm products in wholesale markets was approximately the same as in 1913. In the precipitate drop that followed, their per unit worth in terms of commodities in general, at wholesale, fell to a level 34 per cent below that of the pre-War base period. Other commodities (a much more heavily weighted group, of course) showed an increase of 10 per cent, in per unit purchasing power.[5]

[5] Agricultural economists usually compare post-War prices with average prices prevailing during the five years, August 1909–July 1914. This broader base is taken as more representative of pre-War conditions than any single year could be. For general comparative purposes the situation in 1913 is used in this study as representative of pre-War conditions, but it is desirable that the degree of difference between figures on the two bases be noted. Changes in purchasing power, per unit, between 1910–14 and selected later dates are shown in the following table. The figures are derived from indexes of wholesale prices. (The base is the average of the five calendar years, 1910–14, inclusive.) The general relations shown in this table between raw products of American farms and all other products are much the same as those found when the 1913 base is used. The use of the wider base changes the relative positions of crops and animal products, and lowers somewhat the post-War figures for raw farm products ready for consumption.

	PER UNIT PURCHASING POWER, AT WHOLESALE					
	1910–1914	*1922*	*1929*	*1932*	*July 1929*	*February 1933*
Products of American farms, raw	100	87	96	68	97	62
All other products	100	103	101	109	100	111
Crops, raw*	100	84	94	62	93	61
Animal products, raw*	100	91	99	72	100	64
Products of American farms, raw						
Producers' goods	100	84	92	59	94	56
Consumers' goods	100	97	106	91	104	79

* The index numbers of prices of crops and animal products include the prices of a few imported agricultural products.

PRICES AT THE FARM AND PRICES PAID BY FARMERS

If we take account not of buying and selling prices at wholesale but of prices received at the farm for goods sold and of prices actually paid by farmers for goods they buy we secure a somewhat different picture. These index numbers [6] show that the actual buying and selling position of the farmer was materially worse in February 1933 than is indicated by the wholesale prices of raw farm products and other products. In forty-three months the actual worth of a unit of farm products, in terms of the goods the farmer needs for production and family maintenance, was reduced 43 per cent.

	July 1929	*February 1933*
Commodities sold: average prices at farm	100	37
Commodities bought: average prices paid by farmers	100	66
Commodities sold: average purchasing power per unit	100	57

The degree of loss in per unit purchasing power varied, of course, from group to group of farm products. For grains the loss from July 1929 to February 1933 was 57 per cent, for cotton 54 per cent, for meat animals 52 per cent. The average per unit worth of poultry products declined 39 per cent, that of fruits 36 per cent, that of dairy products 26 per cent, and that of truck crops only 10 per cent.[7] It is noteworthy that

[6] Computed by the U. S. Bureau of Agricultural Economics. Detailed figures are given in Table 24. The measure of purchasing power is derived by dividing the index of prices received by farmers by the index of prices paid by farmers for goods used in production and family maintenance.

[7] Purchasing power is measured with reference to the commodities farmers buy, at retail. The general qualification previously noted, relating to the significance of purchasing power figures for specific months, applies here also. February is not a month of heavy marketing by farmers. A longer period, such as the crop or calendar year, should be used if changes in aggregate purchasing power are to be accurately measured. Aggregate purchasing power of farmers is discussed in a later section.

the three groups of products suffering losses greater than the average—namely grains, cotton and cottonseed, and meat animals—are the great staples for which prices are set in national or world markets. Poultry products, fruits and vegetables and dairy products, the three groups in which losses were less than average, contain a large proportion of consumers' goods that are less sensitive to the play of world economic forces. But in all groups except truck crops the losses in per unit purchasing power during the depression were substantial. For important single products the losses were even greater than those here shown.

Here, again, we should survey these changes with reference to a more distant base. Where did farm products stand, in per unit purchasing power, prior to the recession and at the low point of the depression in 1933, when the base of comparison is a period antedating the War? The accompanying measurements answer this question. The recovery from

	1913	*July 1929*	*February 1933*
Commodities sold: average prices at farm	100	146	54
Commodities bought: average prices paid by farmers	100	151	100
Commodities sold: average purchasing power per unit	100	97	54

the depths of the first post-War depression and the changes of the 'twenties did not restore the relations that had prevailed in 1913 between the prices of things farmers sell and the prices of things they buy. The per unit purchasing power of farm products was 3 per cent less in July 1929 than in 1913. (This does not necessarily mean that farmers were worse off in 1929 than in 1913, for no account is here taken of costs of agricultural production, or of relative changes in the qualities of goods bought and sold. If we could allow for the known reduction of production costs and for improvement in the quality of agricultural implements, the position of the farmer would be somewhat better than is in-

dicated by the figures given.) The ensuing decline, which carried farm prices down far more rapidly than average prices, reduced the average per unit purchasing power of farm products to just about half of what it had been in 1913. Whether we take the pre-War or the 1929 situation as the standard of reference, the economic condition of the farmer in the early months of 1933 was bad.[8]

The major subgroups of farm products stood in February 1933 in the same relative positions, with reference to the pre-War base, as in the comparison based on 1929 parity. The two great international staples, grains and cotton, declined most severely from the 1913 level, while commodities produced primarily for the domestic market resisted the price decline more successfully. Although the range of variation was considerable, the loss was substantial for all groups. In per unit purchasing power grains lost no less than 63 per cent between 1913 and February 1933, cotton lost 55 per cent, while dairy products dropped only 30 per cent.

AGGREGATE PURCHASING POWER OF PRIMARY PRODUCERS

The aggregate purchasing power of the various classes of raw material producers reflected the changes wrought by the depression in their average selling prices and aggregate production. These two factors, together with the average price of goods purchased by each group, determine the volume of goods it receives. The gross purchasing power of a group

[8] The picture is unchanged in its essentials if we use as the base of this comparison the period August 1909–July 1914, as is commonly done by agricultural economists. Following are the index numbers:

	August 1909–July 1914	*July 1929*	*February 1933*
Commodities sold: average prices at farm	100	147	55
Commodities bought: average prices paid by farmers	100	153	101

(which is not to be confused with net income) cannot be measured exactly, largely because adequate records of average buying prices are not available, but the major changes in gross returns may be approximated. For the principal comparisons we assume that the prices of goods purchased by each group fluctuated in the same degree as general prices at wholesale—an assumption only roughly in accord with the facts. Where more exact records of changes in buying prices are available, supplementary use is made of them.

In the preceding chapter we noted the general movements of group purchasing power during the fifteen years, 1914–29. Declining per unit purchasing power of farm products reduced the relative share of the total volume of goods produced going to farmers. A volume of physical output some 11 per cent greater in 1929 than in 1914 brought an aggregate physical return, in goods received, approximately 10 per cent greater.[9] Producers of forest products made a slightly greater gain in aggregate purchasing power, measured at wholesale, since their per unit purchasing power rose some 25 per cent while the number of units produced dropped only 6 per cent. Producers of raw mineral products approximately doubled their purchasing power, gaining both from increased output and advancing per unit worth of their goods.

Against this background we set the changes of the depression years. Three years of recession brought a decline of approximately 57 per cent in the aggregate gross income of all primary producers (as measured by the aggregate value of their product). The volume of physical goods for which

[9] For a discussion of the derivation of these and certain other measurements given in this section the reader is referred to *Economic Tendencies in the United States,* Chs. VII and IX. The measures here cited, which are based upon revised figures, differ somewhat from those in *Economic Tendencies.*

(1)	AGGREGATE VALUE OF PRODUCT, 1932 (1929=100) (2)	AGGREGATE COMMAND OVER GOODS, AT WHOLESALE, AND TWO CONTRIBUTING FACTORS, 1932 (1929=100) (3) Aggregate command over goods	(4) Purchasing power per unit	(5) Number of physical units
All primary producers	43	64	79	88
Producers of				
Raw farm products	45	66	65	99
Raw mineral products	42	61	115	62
Raw forest products	25	37	97	38

this gross income could be exchanged (at wholesale) fell by from 31 to 36 per cent.[10] This decline in physical rewards far exceeded the drop of about 12 per cent in the volume of physical production of primary products. The explanation of the difference is found, of course, in the reduced per unit purchasing power of raw materials, a loss approximating 21 per cent. The unfavorable change in trading relations was

[10] The loss in aggregate command over goods, as given above, was 36 per cent. This is the figure derived by deflating the change in estimated aggregate value of product, appearing in column (2) of the table. But if the entry in column (3) were derived by multiplying the entries in columns (4) and (5), as it logically could be, we would have an index of 69, indicating a loss of 31 per cent in aggregate purchasing power of primary producers, from 1929 to 1932. Residual errors in the value, price and production index numbers account for the difference between this figure and that derived from the table.

Similar errors are present in the measurements relating to the three groups of primary producers. Index numbers of aggregate purchasing power in 1932 (on the 1929 base), derived from the measurements in columns (4) and (5) are 65, 72 and 37, respectively, for the producers of farm products, mineral products and forest products (the last of these is the index given in the table). The differences between these measurements and those in column (3) of the table for producers of farm and mineral products may be taken as indications of the magnitude of the errors involved in the estimates of changes in aggregate purchasing power. For raw mineral products the figure in column (3) is based upon a more complete coverage than are the price and quantity indices.

more important than reduced output in lowering the physical rewards of primary producers.

Among the three groups of primary producers we find some notable differences. Producers of farm products and mineral products suffered roughly equal declines (from 30 to 40 per cent) in aggregate purchasing power. For farmers this drop was due primarily to a loss in the real per unit value of their products; output fell only 1 per cent. Mineral producers actually gained in the real per unit worth of their products, but lost almost 40 per cent in volume of output. Hardest hit of the three groups were producers of forest products. With approximately stable per unit purchasing power, a decline of approximately 60 per cent in volume of output brought an equal drop in their aggregate purchasing power.

The use of an index of wholesale prices in determining changes in the average purchasing power of these various producing groups involves some loss of accuracy, but no other general standard of comparison is available. For farmers an index of changes in the prices of goods purchased is to be had. This shows a loss of about 36 per cent in the average per unit purchasing power of farm products between 1929 and 1932, which is very close to the estimate based on wholesale price changes. The reduction in the physical volume of goods going to farmers was approximately equal to the reduction in total physical output of the country, 36 per cent. The rewards of farmers in 1932 were not commensurate with their physical contribution to the total national production, but they suffered, in respect of aggregate command over goods, no more severely than did consumers at large. Their net cash income was, of course, more sharply curtailed.

Price Changes and Fabricational Margins During Recession

The period of expansion that followed the recession of 1920–21 was characterized by the persistence, even in prosperity, of a relatively wide margin between the prices of finished goods and raw materials intended for fabrication. The exceptionally wide gap that was opened up during the price collapse of 1920 was only partly closed during the succeeding years. Some elements of this situation have been suggested in earlier sections. The weak competitive position of raw material producers after the War, and the correspondingly strong position of manufacturing interests, were related to this differential. In the United States concurrent improvement in mechanical equipment, with increased overhead charges, and the general acceptance in important manufacturing industries of the principle of high wages were also factors in widening the price spread between raw materials and finished goods. In considerable part the gains made by labor during the War were maintained during the recession of 1920–21; during the following decade wage rates and labor costs in manufacturing were high, as compared with pre-War levels. Certain fortuitous circumstances, discussed in Chapter II, served to swell currently available purchasing power and to maintain the volume of production and trade in the United States during the years preceding the 1929 break, in spite of a relatively wide fabricational margin and of relatively high prices to final consumers.

Our immediate concern is with the effects of recession on this situation. Past experience, and consideration of the relative flexibilities of different elements of production costs, lead us to expect a much sharper drop in the prices of materials than in the prices of finished goods, with a resultant widening of the relative, if not of the absolute, margin be-

tween the prices of raw and of finished goods. With the available data various methods may be employed to trace the changes brought by recession in the price relations that define this margin. We turn first to an examination of composite index numbers of the prices of processed goods and of raw materials intended for use in production.

PRICE MOVEMENTS AMONG RAW AND PROCESSED GOODS

The following index numbers relate to changes brought by the recession in the manufacturing differential. As is usual

	WHOLESALE PRICES	
	July 1929	*February 1933*
Producers' goods, raw	100	49
Manufactured goods, all	100	69
Ratio of index of prices of manufactured goods to index of prices of raw producers' goods	1.00	1.41

during recessions, the price drop among raw materials intended for fabrication was distinctly more precipitate than among manufactured goods. Wages and salaries, charges on capital investment, rent and other relatively rigid elements of cost serve as effective brakes on the decline in prices of manufactured goods, while the greater possibility of controlling supply renders maintenance of prices easier than among most raw materials. Moreover, differences in the duration of production processes and in durability may be important causes of differences in the price flexibility of different goods.

The significance of this shift in relative values may be more clearly revealed if we assume that producers of raw materials exchange their goods directly for the manufactured commodities made from them. The ratios at the foot of the preceding table define this relation. In February 1933, 1.41 units of raw materials were required to purchase that quan-

tity of manufactured goods that one unit of raw materials would have purchased in July 1929. Over forty-three months the per unit purchasing power of raw materials had declined notably; in the absence of compensating changes, this loss was bound to have its effect on the volume of finished goods that could find a market.

The same comparison, on a pre-War base, is made below.

	WHOLESALE PRICES			
	1913	*1922*	*July 1929*	*February 1933*
Producers' goods, raw	100	127	134	66
Manufactured goods, all	100	155	153	105
Ratio, manufactured to raw	1.00	1.22	1.14	1.59

Because of the gap between the prices of raw producers' goods and of manufactured goods already existing in 1929, the situation here disclosed is blacker than that shown by the preceding table. Raw materials for use in fabrication sold in February 1933 at prices 34 per cent below those of 1913, while goods in the intermediate or finished stage of the fabrication process sold at prices 5 per cent above 1913 prices. Even more striking are the shifts that occurred in the trading relations between raw and processed goods, as distinct classes. A constant quantity of manufactured goods, which could be purchased for a single unit of raw materials in 1913, was worth 1.22 units of raw materials in 1922, 1.14 units in July 1929, and 1.59 units in February 1933. Of course, it is not accurate to picture domestic trade as an exchange between these two broad groups of producers, but a considerable volume of goods is so exchanged. In this trading area the shift in relative values was revolutionary; it affected established relations throughout the economic system and altered materially the distribution of current purchasing power.

To secure a clearer understanding of the changes in the manufacturing differential during the recent recession we

must go behind the broad averages shown above, for there have been wide differences, among the major commodity groups, in the degree of change in the margin between raw and processed goods. For each class we contrast raw producers' goods (that is, goods subject to fabrication before being ready for use) with manufactured goods.

	WHOLESALE PRICES	
	July 1929	*February 1933*
Crops:		
Producers' raw	100	38
Processed	100	65
Ratio, processed to raw	1.00	1.71
Animal products:		
Producers' raw	100	34
Processed	100	54
Ratio, processed to raw	1.00	1.59
Minerals:		
Producers' raw	100	70
Processed	100	80
Ratio, processed to raw	1.00	1.14
Metals:		
Producers' raw	100	63
Processed	100	81
Ratio, processed to raw	1.00	1.29

The actual price declines were substantially greater among crops and animal products than among minerals. But our immediate interest is in the margin between the two sets of prices in each general category. In all cases the manufacturing margin widened, as is shown by the ratios that define the number of units of raw producers' goods of each type required to purchase, in February 1933, a stated quantity of processed goods of the same type (i.e., the ratio of the price index for processed goods to the corresponding index for raw materials). To purchase a certain constant quantity of goods manufactured from farm crops one unit of raw materials was necessary in July 1929; 1.71 units were required in

February 1933. The corresponding ratio for animal products in February 1933 was 1.59, for mineral products 1.14, and for the subgroup of metal products 1.29.

With reference to a pre-War base, the 1933 situation shows even more extreme changes. Crops and animal products, the

	WHOLESALE PRICES			
	1913	*1922*	*July 1929*	*February 1933*
Crops:				
Producers' raw	100	127	137	52
Processed	100	146	143	93
Ratio, processed to raw	1.00	1.15	1.04	1.79
Animal products:				
Producers' raw	100	130	148	50
Processed	100	150	167	91
Ratio, processed to raw	1.00	1.15	1.13	1.82
Minerals:				
Producers' raw	100	140	135	94
Processed	100	159	152	122
Ratio, processed to raw	1.00	1.14	1.13	1.30
Metals:				
Producers' raw	100	121	128	81
Processed	100	151	164	133
Ratio, processed to raw	1.00	1.25	1.28	1.64

weakest in economic position among primary products, experienced the greatest widening of the fabricational margin. In both groups raw materials dropped, in February 1933, to approximately half their 1913 price, while the corresponding manufactured goods declined less than 10 per cent. In exchange for constant quantities of finished goods of the same class, approximately 80 per cent more, by volume, of each type of raw material was required than in 1913. Here were probably the most extreme shifts in exchange relations that occurred in the price system. Raw minerals intended for fabrication were in better position; the low price of the depression was only slightly below the 1913 price; processed goods were some 20 per cent above. The measurements for

metals indicate that the widening of the fabricational margin for minerals as a broad class was heavily influenced by the growing cleavage between the prices of raw metals and processed metallic products.

A clearer contrast between farm and non-farm products, and between corresponding manufacturing differentials, is afforded if we deal with the two major groups alone. The exchange ratio between the prices of raw and processed farm

	WHOLESALE PRICES	
	July	*February*
Products of American farms:	*1929*	*1933*
Producers' raw	100	37
Processed	100	60
Ratio, processed to raw	1.00	1.62
Products other than those originating on American farms:		
Producers' raw	100	64
Processed	100	77
Ratio, processed to raw	1.00	1.20

products increased sharply during the recession. The producer of raw materials who desired to exchange raw for manufactured goods of the same type was required to give 62 per cent more, by volume, in February 1933 than in July 1929, for a constant quantity of processed goods. The corresponding increase for non-farm products was 20 per cent.[11]

[11] Measurements for these groups on a pre-War base show still wider changes but with the increase in the raw-processed differential still distinctly greater for farm than for non-farm products.

		WHOLESALE PRICES		
			July	*February*
	1913	*1922*	*1929*	*1933*
Products of American farms:				
Producers' raw	100	130	148	54
Processed	100	151	161	96
Ratio	1.00	1.16	1.09	1.78
Products other than those originating on American farms:				
Producers' raw	100	123	118	76
Processed	100	158	146	112
Ratio	1.00	1.28	1.24	1.47

Other categories of commodities show the same general movements. We may briefly summarize the shifts in exchange relations between various categories of goods. Detailed measurements are given in Appendices III and IV. We cite here merely the ratios of the index numbers of processed goods to those of raw (or semi-finished) materials, recalling that such a ratio measures changes in the physical volume of raw materials exchangeable for a fixed volume of processed goods.

Between July 1929 and February 1933 the ratio of the price index of processed consumers' goods to the index of producers' goods intended for human consumption increased from 1.00 to 1.43; between 1913 and February 1933 the ratio increased from 1.00 to 1.77.

Breaking the above group of consumers' goods into foods and non-foods, we find no substantial difference between them during the recession. Over a longer period there was a notable difference, however. Between 1913 and February 1933 the ratio of the price index for finished food products to the price index for unfinished food products increased from 1.00 to 1.53; for non-foods, among consumers' goods, the increase was from 1.00 to 1.97. A greater degree of fabrication with corresponding improvements in quality would account for part of the widening of this particular differential, but hardly for all.

Between July 1929 and February 1933 the ratio of the price index for processed goods intended for use in capital equipment to the corresponding price index for raw materials increased from 1.00 to 1.39; between 1913 and February 1933 the ratio increased from 1.00 to 1.65. The relative costliness of capital equipment, which was a conspicuous feature of the decade of the 'twenties, was markedly accentuated by the widening of this particular price differential during the recession.

MOVEMENTS OF MANUFACTURERS' MARGINS, AS SHOWN BY CHANGES IN THE PRICES OF SIMILAR COMMODITIES AT DIFFERENT PRODUCTIVE STAGES

The measurements given above represent price changes at different stages of the manufacturing-distributive process. We may supplement these representative figures by direct measurements of changing differentials in the manufacturing process, derived from the prices of 'identical' commodities (more accurately, commodities containing the same materials) at successive fabricational stages—wheat and flour, raw silk and spun silk, raw sugar and granulated sugar, pig lead and lead pipe, etc. Our present purpose will be served by the comparison of averages defining price changes from 1929 to 1932 for a group of 174 simple processed goods with corresponding measurements for the raw materials from which these goods were made.

	WHOLESALE PRICES			
	1929	*1930*	*1931*	*1932*
Raw materials	100	85	63	54
Simple processed goods made from these materials	100	88	72	64

Here, where we are dealing with precisely the same commodities in raw and processed form, we find the widening margin revealed by the index numbers appearing on preceding pages. The annual averages indicate a drop of 36 per cent in the prices of the simple processed goods here represented, a drop of 46 per cent in the prices of their raw materials, from 1929 to 1932.[12] The margin of difference is substantial (the ratio of the index for processed goods to that for raw materials in 1932 was 1.19), but somewhat smaller than those given in preceding sections. The use of annual

[12] Detailed measurements for the different groups of commodities included in the above averages are given in Appendix V.

rather than monthly values tends to lessen this margin. More important is the fact that the processed goods represented in the above index are not highly fabricated products. Simple processed goods are closer to raw materials, in their price movements, than are highly fabricated goods.

MANUFACTURING COSTS, 1929–1933

The recession of 1929–33 was marked, as have been other recessions, by a fall in the prices of raw materials much more severe than that for finished goods. The various costs of fabrication were not reduced during this decline by amounts equal to the drop in material prices. So much we learn from the records of wholesale prices we have been reviewing. But we do not get from these figures detailed information concerning the relations between the changes in different fabricational costs and, indeed, such information is not to be had from ordinary price quotations. Records of the Census of Manufactures contain data bearing on this question. We may review them for light on the course and character of liquidation in manufacturing industries. Changes in prices and costs in manufacturing industries at large are defined in the next table and are shown graphically in Figure 6.[13] The measure-

	SELLING PRICE		COST OF MATERIALS		COST OF FABRICATION PLUS PROFITS		LABOR COST		OVERHEAD COSTS PLUS PROFITS	
1914		100		100		100		100		100
1929	100	145	100	136	100	166	100	157	100	172
1931	78	113	74	100	84	140	87	137	82	141
1933	66	96	63	85	72	120	75	117	71	122

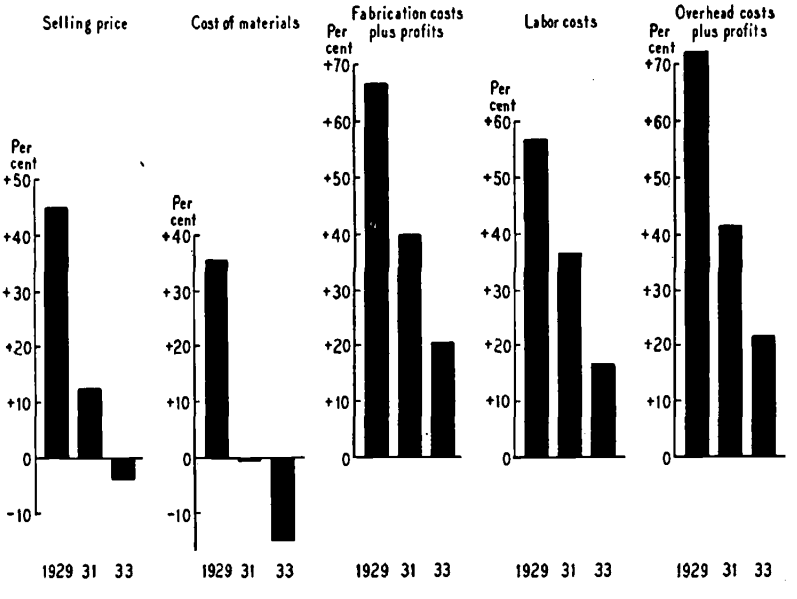
[13] For an explanation of the derivation of these measurements, see *Economic Tendencies in the United States,* pp. 88–9. The index numbers in that book have been revised slightly in preparing the present table. Index numbers for other Census years are given in Appendix VI.

FIGURE 6

CHANGES IN AVERAGE SELLING PRICE, COST OF MATERIALS AND ELEMENTS OF FABRICATION COSTS PLUS PROFITS, PER UNIT OF PRODUCT, 1914–1933

MANUFACTURING INDUSTRIES OF THE UNITED STATES

(Percentage deviations from 1914 level, in current dollars)



ments relate to average price and cost changes per unit of manufactured product.

The index numbers on the 1929 base indicate a drop of 34 per cent in the average selling price of manufactured goods during the four years ending in 1933. (The actual depression low in commodity prices, on an annual basis, came in 1932, rather than 1933, but the Census materials employed in the derivation of these measurements are not available for 1932.) This decline was the net resultant of drops of 37 per cent in material costs, 28 per cent in fabrication costs (which here include profits) per unit of manu-

factured product. A lag in the reduction of manufacturing costs is, of course, to be expected. It is here that the more rigid components of price are found. Changes in two elements of these fabricational charges are shown by entries in the remaining columns of the table. These indicate that labor costs per unit of product fell some 25 per cent, while the composite of overhead costs plus profits declined 29 per cent. (It is to be noted that the 1929 index of overhead costs plus profits was relatively high, some 6 per cent above 1927, while labor costs per unit in 1929 were 7 per cent below 1927. Subsequent declines are to be interpreted with these facts in mind.)

One of the most interesting features of this table, and one that points to certain distinctive aspects of the 1933 situation, is found in the failure of the index numbers derived from Census data to agree with measurements based on direct price quotations on manufactured goods. The differences are clearly revealed by the following index numbers relating to the average selling prices of manufactured goods. The drop

	1929	*1931*	*1933*
Prices realized by manufacturers (*Census data*)	100	78	66
Prices quoted in wholesale markets (*National Bureau of Economic Research*)	100	81	76

of 34 per cent in the average prices realized by manufacturers is substantially greater than the decline of 24 per cent shown by the index based upon prices quoted in wholesale markets. Indeed, the decline of 34 per cent appears to be inconsistent with the various bits of evidence previously presented, which indicated a considerable expansion in the manufacturing differential during the recession. This expansion appeared to be the result of the lagging adjustment of the final selling prices of manufactured goods to the sharp price declines occurring in the markets for raw materials. Yet the 34 per cent

drop in average prices received by manufacturers is not far short of the decline of 40 per cent recorded for producers' goods, in raw state.

It is well to recall, at this point, the derivation of the price index based upon Census data. It is secured by dividing an index of the total value of manufactured products by an index of the physical volume of production. The process is equivalent to that employed in computing average price by dividing the aggregate value of a stock of goods by the number of physical units. In the present case, of course, relative numbers, defining changes in aggregate value and in physical output, are used in deriving index numbers of changes in average selling price. The price index numbers thus derived are, obviously, measures of realized price and not of quoted price. There is here a possibility of difference between index numbers based on samples of quoted prices and those derived in the manner just described. Furthermore, we should note that the measures of realized price are fully comparable, from one period to the next, only on the assumption that no considerable change takes place in the average quality of the goods entering into the aggregate. If quality improves or deteriorates materially, or if the relative importance of goods in different price classes changes notably, the changes in average realized price and in the average quoted price on goods of unchanging quality would not be the same.

Index numbers of average selling prices of manufactured goods, as derived from Census records, are thus not equivalent to measurements based directly upon quoted prices. In some degree they serve as checks upon them, being especially valuable for this purpose because of the comprehensive character of the data upon which they are based. During periods when no great changes occur in the quality and constitution of the stream of manufactured goods, close agreement between the two sets of measurements may be expected. In fact,

during the decade 1919–29, in which five biennial comparisons of realized and quoted prices are possible, very close agreements were recorded.[14] But when the composition of the stream of manufactured goods changes, whether because of quality changes or of shifts in the relative importance of goods in different price classes, the index of realized prices will differ from an index relating to quoted prices on goods of standard quality.

During the recession from 1929 to 1933 changes of four different types may have affected the price records of manufactured goods.

1. Reduction of prices of standard goods, without change in quality.

[14] The following index numbers of the average selling price of manufactured goods bear upon this point:

	PRICES QUOTED IN WHOLESALE MARKETS (*National Bureau of Economic Research*)	PRICES REALIZED BY MANUFACTURERS (*Census data*)
1919	100	100
1921	79	79
1921	100	100
1923	100	99
1923	100	100
1925	100	99
1925	100	100
1927	94	94
1927	100	100
1929	100	98
1929	100	100
1931	81	78
1931	100	100
1933	93	85

This change would be reflected equally in quoted and realized prices.

2. Reduction of prices, accompanied by a lowering of quality, but without change in names or apparent standards of manufactured goods.

   This change would be reflected equally in quoted and realized prices. However, part or all of the reduction of material costs, or fabrication costs, would be due to the lowering of quality and would not represent an actual reduction of the market prices of materials, or of fabrication costs for work of constant quality.

3. Shift by manufacturer and consumer to goods of lower price and quality, without change in the actual or quoted price on goods of constant quality. (A larger proportion of the total manufactured product would consist of goods of lower quality and lower price.)

   This shift would not be reflected in quoted prices, and would thus not affect the current price index numbers. It would, however, be reflected in the average price realized by manufacturers. The average cost of materials, per unit sold, or the average cost of fabrication, or both, would also be reduced.

4. Undercover cutting of prices on standard goods, without change in quality and without change in quoted prices.

   This price-cutting would be reflected in realized prices. The average cost of materials, per unit sold, would not be reduced, but the average cost of fabrication per unit sold would be lowered (since profits per unit are included in the aggregate 'value added' from which cost of fabrication is estimated).

It is impossible to determine, in quantitative terms, the relative importance of these four types of change. It is not to be doubted that movements of the first type, involving straight price reductions for goods of standard grade, were highly important, indeed, most important, in bringing about the observed price changes of the recession period. There

were doubtless, also, movements of the fourth type—undercover cutting of prices, not reflected in current quotations. Although definite evidence is lacking, it is a matter of general knowledge that during the months of most severe depression goods of many kinds were being sold at special prices. It is a fair assumption, therefore, that part of the divergence between realized and quoted prices is attributable to this source. The most important factor in this divergence, however, was probably a reduction in the grade of manufactured goods marketed, due largely to a shift by manufacturer and consumer to goods of lower price and quality. Accommodation to a lower income was effected by the typical consumer through the purchase of clothing, shoes, automobiles, and, to some extent, foods from lower price classes. In the main, this also meant goods of lower average quality. As a mass phenomenon this movement was probably more important during the recent depression than in any depression through which the present generation has passed.

Evidence of two types bears on this shift. For automobiles, a commodity of considerable importance in the domestic economy of the United States, we have records showing production by price classes in different years. In 1929, 54 per cent of all cars produced were priced, at wholesale, at $500 or less. In 1933 the corresponding percentage was 81. Further, we may note that in 1929, 18.6 per cent of all cars produced were priced at more than $750; in 1933 the prices of only 4.5 per cent exceeded $750, at wholesale.[15] Of course, this change was due in some degree to straight price reductions, but in the main it reflected a real shift by buyers to cheaper cars. (This shift was stimulated in part, of course, by a considerable improvement in the quality of the cheaper cars.) The

[15] See National Automobile Chamber of Commerce, *Automobile Facts and Figures*, 1934 ed., p. 22.

net result of such a shift would be just such a reduction in the average price realized by manufacturers as we have observed, a reduction that does not reflect an actual decline in quoted prices on standard goods.

Equally revealing is evidence of another sort. We bring together below measurements relating to the declines in the average prices of materials of manufacture and of finished goods during two post-War recessions. The first two entries

	Percentage decline	
	1919–1921	*1929–1933*
Producers' goods, all, wholesale	29	32
Producers' goods, raw, wholesale	40	40
Cost of materials, per unit of manufactured goods	23	37
Selling price (realized), per unit of manufactured goods	21	34

relate to changes in quoted prices in wholesale markets, for producers' goods in general and for raw producers' goods. These classes are not identical with the 'materials of manufacture', but such materials, raw and semi-finished, come from the broad classes of goods represented by these two entries. From 1919 to 1921, when raw producers' goods were declining 40 per cent in price, and all producers' goods were dropping 29 per cent, the average cost of materials, to manufacturers, declined only 23 per cent. From 1929 to 1933 raw producers' goods, as priced in wholesale markets, dropped by exactly the same percentage as from 1919 to 1921, and the general group of producers' goods fell only slightly more than in the first post-War recession. With conditions in respect of quoted prices of 'materials' thus almost identical, we should expect to find approximately equal declines in the average cost of materials to manufacturers, in the two recessions. Instead, we find a drop of 37 per cent, from 1929 to 1933, as compared with a drop of 23 per cent from 1919 to 1921. We may note that the latest drop in the average cost of materials

to manufacturers, per unit of goods produced, almost equalled the decline in the average price of raw producers' goods, at wholesale, although manufacturers' 'materials' include semi-finished goods and supplies of all sorts.

The notable reduction between 1929 and 1933 in the cost of materials entering into a unit of manufactured goods might have occurred as a result of 'skimping', the use of less material per unit of finished goods; it might have resulted from a lowering of the average quality of materials purchased for manufacture. It might, finally, have been due to the general concentration of manufacturers on the production of finished goods of lower average quality and price. Such a shift to goods of lower grade might or might not involve skimping, or the use of materials of poorer quality. To some extent the recession undoubtedly brought a reduction in the real quality (and price) of goods represented by current quotations (a change of type 2). In greater degree, however, the lowering of the cost of materials was probably due to a shift on the part of manufacturers to the production of goods in the lower price ranges with no necessary reduction in the quality of these cheaper goods (a change of type 3). Only a shift of this sort would account for the divergence between quoted and realized prices that was so marked a feature of the 1933 situation.[16]

[16] Comparison, by industries, of measurements of changes in average quoted prices and in average prices realized by manufacturers indicates that the chief divergences occurred in the industries listed below. It was in these industries, presumably, that there occurred pronounced shifts to the production of goods of lower average price. The list is not exhaustive, for quoted prices are not available for all industries, for comparison with the prices realized by manufacturers.

Flour and grain mill products
Cotton goods
Woolen and worsted goods
Boots and shoes
Lumber
Rubber products
Paper

Changes over a longer period are shown by the entries on the 1914 base (see table, p. 117). Both 1914 and 1933 were years of depression (the latter much more severe, of course), and the comparability of the measurements is thereby improved. In 1933 the average selling price of manufactured goods was 4 per cent lower than in 1914. Changes in the two components of this price were markedly different. The average cost of materials in 1933 was 15 per cent below the 1914 cost; the cost of fabrication, including profits, was 20 per cent above. These figures define one of the most striking changes in the American economy during the last two decades. It is true that quality changes obscure somewhat the direct comparison of costs. An increasing degree of fabrication has been a long-term tendency in American industry, and this factor would tend to increase costs of fabrication, relatively to material costs. A shift, in 1933, to goods of lower average quality would also tend to reduce cost of materials. But the notable expansion in the manufacturing margin between 1914 and 1933 cannot be explained in terms of these movements, alone. The increase in the costs of fabrication during and immediately following the War persisted during the decade of the 'twenties and survived the rigors of the most recent decline. The cost to the final consumer of a fixed task of fabrication, as this cost enters into the selling price of the finished goods he buys, was notably higher in 1933 than in 1914.

The changes in manufacturing costs between 1929 and 1933 were in some respects unlike those of the period 1919–21, as we have noted in one of the preceding comparisons. The periods are not strictly comparable, it is true, because the phases of the two depressions do not agree. But a further comparison of the net changes over these periods throws light on some of the distinctive features of the latest decline. The more recent recession, which covers two Census intervals,

may be followed over a two-year and a four-year period.[17]

	Percentage decline		
	1919–1921	*1929–1931*	*1929–1933*
Average selling price (realized) of manufactured goods	21	22	34
Average cost of materials, per unit of product	23	26	37
Fabrication cost plus profits, per unit of product	17	16	28
Labor cost	5	13	25
Overhead, plus profits	26	18	29

In comparing these figures we should observe that the recession that initiated the current depression began in the summer of 1929, whereas the peak of production during the first post-War boom was not reached until the early autumn of 1920. Thus 1933 stands four full years removed from the beginning of the recession whereas the entries for 1921 relate to a period but one year later than the beginning of the first post-War decline. These differences in timing are to be kept in view, in addition to the differences in the duration and severity of the two recessions.

The drop in the average selling prices of manufactured goods from 1929 to 1933 was much more severe than the decline from 1919 to 1921. (A shift to goods of lower average quality played a considerable part in this decline, as we have already noted.) Liquidation was not only more protracted; it cut deeper. Cost of materials dropped 37 per cent, as against the earlier drop of 23 per cent; fabrication costs (plus profits) fell 28 per cent, as against the 1919–21 decline of 17 per cent.

A striking difference between the periods is found in the

[17] The data for 1919–21 relate to 58 manufacturing industries, those for 1929–31 to 112 industries and those for 1929–33 to 82 industries. They are thus not fully comparable in detail, but the samples may be accepted as representative of manufacturing industries in general.

relative movements of the two elements of fabrication costs. Labor costs per unit of product declined but 5 per cent between 1919 and 1921. The greater decline in the recent period, 25 per cent, is probably due in part to the time factor previously noted. Labor costs are usually difficult to reduce; an extended spell of liquidation brings more drastic cuts than does a briefer depression. Indeed, it is notable that the reduction in labor costs was greater from 1931 to 1933 than from 1929 to 1931. For all the other elements recorded the decline was retarded in the second of these two-year periods. The declines of overhead costs plus profits, per unit of product, were approximately equal in the two periods of post-War recession—26 per cent between 1919 and 1921, 29 per cent from 1929 to 1933. But the later drop, though approximately equal in magnitude to the earlier, was slower and more protracted. The fall during the first two years of recession was substantially less than from 1919 to 1921.

The reasons for these differences are many. The greater relative importance in the recent period of overhead expenses proper [18] is undoubtedly one factor. More machinery was in use per employee in 1929 than in 1919. Furthermore, most fixed elements in cost were more strongly entrenched in 1929, after eight years of relative price stability, than they were immediately after the sharp price changes of the War years, and thus offered greater resistance to reduction. In addition, the greater magnitude of the decline in volume of manufacturing production after 1929 rendered more difficult the downward adjustment of fixed costs, on a per unit of product basis. Finally, the price drop that began in 1929 was much more gradual than that of 1920, and business men were slower to accept the idea that the pre-recession price level would probably not be restored. So long as men thought

[18] In 1919 overhead expenses plus profits constituted 18 per cent of the total value of product; in 1929, 24 per cent.

of the 1929 price level as 'normal' they were reluctant to reduce their fixed charges. Not until the recession had turned into depression was this conception generally abandoned.

The measurements that define changes in 'overhead costs plus profits' per unit of product relate, as we have noted, to a highly heterogeneous composite.[19] During a period of liqui-

[19] The compilations of the Census of Manufactures do not permit an analysis of this composite into its elements, but the general nature of these elements may be determined from corporate returns to the Bureau of Internal Revenue. The figures below, from *Statistics of Income* for the year 1929, refer to corporations engaged in manufacturing operations. (Corporations produced 92 per cent of all manufactured goods, by value, in the year 1929.) The figures on p. 130, from the *Census of Manufactures* for 1929, relate to all manufacturing establishments. The figures from the two sources are not comparable in detail, since they differ in respect of enterprises covered (non-corporate returns are excluded from the first column), industries included (a few industries, such as those producing motion pictures and manufactured gas, are excluded from the Bureau of Internal Revenue compilations), and accounting procedures, but the comparison of broad totals will serve the present purpose.

DATA FROM STATISTICS OF INCOME, 1929

(millions of dollars)

Cost of goods sold			52,165
Other statutory deductions			
Compensation of officers	1,172		
Interest	712		
Taxes, other than income	617		
Bad debts	267		
Depreciation	1,753		
Depletion	265		
Miscellaneous	10,192		
Total other statutory deductions		14,978	
Income tax		544	
Compiled net profits, less tax		4,537	
Total, other statutory deductions, income tax, and net profits less tax			20,059
Total receipts, manufacturing corporations			72,224

(Total receipts of manufacturing corporations include $69,236 million from gross sales and $2,988 million of other receipts—interest, rents, dividends, profits from operations other than those represented under gross sales, etc.)

dation, indeed, it is to be expected that the two major elements of this composite will move in opposite directions. It is not possible, using the data of the Census of Manufactures, to break this composite item into its component parts. We may, however, make use of records contained in *Statistics of Income,* issued by the Bureau of Internal Revenue, in estimating the relative changes in overhead costs and in profits, per unit of manufactured product.[20] These estimates, and

	1927	*1929*	*1931*	*1933*
Overhead costs, per unit of product	100	103	117	92
Profits, per unit of product	100	119	(deficit)	.15

they are, of course, only estimates, show a slight advance in overhead costs proper between 1927 and 1929, and a substan-

(*Footnote* [19] *concluded*)

DATA FROM CENSUS OF MANUFACTURES, 1929
(*millions of dollars*)

Total direct costs (wages, materials, fuel, purchased energy)			50,171
Overhead plus profits, other than salaries		16,069	
Salaries of principal officers	964		
Salaries in central offices	600		
Other salaries	2,631		
Total salaries		4,195	
Overhead plus profits, total			20,264
Total value, manufactured products			70,435

[20] The ratio of net income to gross income was computed for the four years 1927, 1929, 1931 and 1933 from data for corporations published in *Statistics of Income.* Only data for those industries included in the Census sample were used. These ratios were then applied to the 'values of product' reported in the Census for the corresponding years, yielding a series of dollar figures representing profits. A similar series for overhead was obtained by subtracting the estimated profits from the Census 'overhead plus profits.' These two series were converted to relatives on the 1927 base, and these were divided by index numbers of physical volume of production on the same base. The resulting series, in relative form, provides the figures given in the text.

In these calculations tax-exempt income (dividends and interest on tax-free government bonds) is excluded from both net profits and gross income in order to avoid attributing to manufacturing operations much of the income derived from other sources.

tial increase, amounting to 14 per cent per unit of product, during the next two years. The spreading of overhead costs among a smaller number of physical units was the immediate reason for this advance during the first years of the recession. Between 1931 and 1933, however, average overhead costs, per unit of product, dropped 22 per cent. This left overhead costs per unit still high, in comparison with more flexible elements of selling prices, but the evidence of sharp slashing of obdurate fixed costs between 1931 and 1933, in the face of declining volume of output, is impressive.

Profits per unit shared in the expansion preceding the 1929 break, advancing no less than 19 per cent from 1927 to 1929. The next two years wiped out all profits, leaving manufacturing industries with a net deficit. By 1933 profits were again appearing although on a per unit basis they amounted to only 15 per cent of 1927 returns.

The major conclusions to be drawn from this general survey of liquidation among manufacturing industries, between 1929 and 1933, may be briefly summarized.

Although the general drop in prices was less severe than in the 1920–21 recession, the prices of manufactured goods were much more sharply reduced in the latest recession.

Material costs and selling prices were reduced by manufacturers, in the 1929–33 recession, through a lowering of the average quality of goods purchased and sold. (This process merely supplemented, of course, actual reductions in the prices of both materials and finished goods.) A shift to goods of lower quality (and price) was a distinctive feature of this recession.

Labor costs were much more severely cut in the 1929–33 recession than in that of 1920–21.

As in all recessions, the cost of fabrication increased, relatively to final selling price, in the 1929–33 decline. Since such costs were already high, prior to the recession, the fabricational margin was exceptionally wide in 1933. This fact was in part con-

cealed, in the records of realized prices, by the shift to materials and finished products of lower average quality.

Overhead costs per unit actually increased, between 1929 and 1931, but were cut some 20 per cent during the two following years. Profits per unit disappeared in 1931, but in 1933 they averaged 15 per cent of the 1927 returns and 13 per cent of the 1929 returns.

Faced by the numerous difficulties of production and marketing raised by the recession, manufacturers sought to adapt their costs to the reduced incomes of consumers by shifting to goods of lower quality, sharply reducing labor costs and cutting the sluggish elements of overhead. Efforts in these directions were especially strong between 1931 and 1933. Advances in productivity furthered these efforts to reduce costs. Nevertheless, volume of production was seriously curtailed and the fabricational margin that represents the cost of manufacturing processes was widened, relatively to general prices.

On the Incidence of Recession among Manufacturing Industries

The use of averages for all manufacturing industries in defining changes in selling prices, fabrication costs, etc., gives a misleading impression of uniformity of behavior among these industries during a general industrial decline. No such uniformity prevails, of course. There is wide diversity in the response of manufacturing industries to the forces of recession, as is strikingly revealed by the series of frequency distributions in Table 6. These distributions are constructed from measurements relating to changes in production, selling price and the various elements of selling price for 82 manufacturing industries. (The unit, be it noted, is a change in a single *industry* or in a group of closely-related industries, not in a single establishment.)

The median values of the items entering into these various distributions differ, ranging from 69.4 for material costs to 78.4

for overhead costs plus profits, per unit of product. But our immediate interest centers in the evidence of diversity of fortune among the individual industries represented. In each distribution the range of values is considerable. It is significant that the variation in output is distinctly greater than the variation in selling prices; there appears to be more cohesion among manufacturing industries in respect of prices than in respect of physical production.

Among the components of selling price there is greatest dispersion in changes in overhead costs plus profits. Wide variation in the composite of overhead costs and profits is to be expected during recession, since both elements are subject to extreme and usually conflicting changes at such a time.

TABLE 6

FREQUENCY DISTRIBUTIONS OF RELATIVE NUMBERS MEASURING CHANGES IN VOLUME OF PRODUCTION, IN SELLING PRICE AND IN CERTAIN COMPONENTS OF SELLING PRICE, IN 82 MANUFACTURING INDUSTRIES, 1929–1933

(*All measurements relate to changes per unit of product.*)

INDEX NUMBERS (*1933 as percentage of 1929*)	FREQUENCY (*Number of industries experiencing stated change*)					
	Physical volume of production	Selling price	Material costs	Fabrication costs	Labor costs	Overhead costs plus profits
22 and under	3					
25	2					
28	1					
31	3					
34	1					
37	3		1			
40	2				1	
43	3	2	2	1	2	2
46	2	2	1	3		2
49	1	3	7	1		2
52		1	2	2		3
55	3	5	5	1	1	3
58	2	3	3	4	4	6
61	4	3	5	4	7	2
64	3	7	6	4	2	6

(*Table 6 concluded on p. 134*)

TABLE 6 (*cont.*)

FREQUENCY DISTRIBUTIONS OF RELATIVE NUMBERS MEASURING CHANGES IN VOLUME OF PRODUCTION, IN SELLING PRICE AND IN CERTAIN COMPONENTS OF SELLING PRICE, IN 82 MANUFACTURING INDUSTRIES, 1929–1933

(All measurements relate to changes per unit of product.)

INDEX NUMBERS (*1933 as percentage of 1929*)	FREQUENCY (*Number of industries experiencing stated change*)					
	Physical volume of production	Selling price	Material costs	Fabrication costs	Labor costs	Overhead costs plus profits
67	2	7	7	5	9	5
70		6	7	4	7	3
73	5	5	8	6	8	3
76	5	3	5	5	2	2
79	1	7	4	5	9	7
82	4	7	3	7	3	6
85	6	6	3	5	3	5
88	7	8	2	6	5	3
91	3	1	4	4	3	3
94	2	3	2	5	5	4
97	2		1	2	2	4
100	3	1			1	2
103	1		1	1	2	
106	2		1	2	1	1
109	1			1	2	2
112		2	1	2		2
115						3
118			1			
121				1		
124					1	
127	2					
130						1
133 and over	3[3]			1[4]	2[5]	
Total	82	82	82	82	82	82
Median	75.1	72.7	69.4	78.1	74.5	78.4
Index of dispersion[1]	26.6	14.2	14.7	14.7	14.7	18.0

[1] Half the range between the two quartiles, as a percentage of the median.
[2] One item in each of the following classes: 10, 13, 19.
[3] One item in each of the following classes: 136, 151, 208.
[4] One item in the following class: 136.
[5] One item in each of the following classes: 142, 157.

AGGREGATE PURCHASING POWER OF MANUFACTURING PRODUCERS

Practically all exchanges of goods today are monetary transactions, involving set prices. The purchasing power of a given group of producers in these markets depends on their aggregate money income and upon the average price paid for the goods bought. In tracing the effects of the recession on the purchasing power of producing groups we have already dealt with producers of raw materials. There we noted drastic reductions due, in the main, to declines in the average price of goods sold. The details of the picture are somewhat different for agents of fabrication.

	1929	*1931*	*1933*
Volume of manufacturing production	100	75	69
Average price per unit for fabrication (i.e., cost of fabrication)	100	84	72
Aggregate value added by manufacture	100	63	50
Aggregate purchasing power of value added in wholesale markets	100	82	72
Aggregate purchasing power in terms of articles entering into cost of living	100	70	66

These figures, which relate to a large sample of industries for which comparable data are available, indicate a drop of 37 per cent in the money income of agents of fabrication (as measured by aggregate 'value added') between 1929 and 1931, a drop of 50 per cent, between 1929 and 1933. (Were data available for 1932 they would show a lower level than in 1933.) These declines are the resultants of severe drops in volume of output, less severe declines in the average price per unit received by agents of fabrication.

Reduction in the aggregate money value of the services rendered by agents of fabrication did not entail an equal drop in their real purchasing power. The prices of the goods they purchased declined also, of course. If these buying prices

be considered to have declined after 1929, on the average, at the rate of fall in general wholesale prices, the drop in the physical purchasing power of fabricators may be estimated at about 28 per cent, between 1929 and 1933. If the yardstick of change in buying prices be the cost of living index for industrial workers, the drop in purchasing power may be estimated at 34 per cent. The true figure probably lies between these limits. We may conclude that the physical volume of goods that could be purchased by persons drawing their incomes from manufacturing industries declined approximately 30 per cent between 1929 and 1933.[21]

The above estimates of changes in the aggregate purchasing power of those drawing incomes from manufacturing industries are based directly upon Census compilations. Census and other records have been used by the Department of Commerce in making annual estimates of the total income disbursements by manufacturing industries.[22] These figures have the value, for the present purpose, of including all elements of income paid out, such as dividend payments out

	1929	*1930*	*1931*	*1932*	*1933*
Income paid out by manufacturing industries					
In millions of dollars	18,013	15,940	12,364	8,543	8,514
In relative terms	100.0	88.5	68.6	47.4	47.3
Purchasing power of incomes paid out by manufacturing industries					
In wholesale markets	100.0	97.6	89.6	69.7	68.4
In terms of articles entering into cost of living	100.0	90.4	76.6	58.7	62.1

21 These estimates are made on an annual basis because of the difficulty of measuring, on a monthly basis, changes in the purchasing power of manufacturing producers. The annual figures, of necessity, show changes less extreme than those that actually occurred.

22 See "Expansion in the National Income Continued in 1935" by R. R. Nathan in *Survey of Current Business,* July 1936, pp. 14–19, and "Income Originating in Nine Basic Industries, 1919–1934" by Simon Kuznets, *Bulletin 59,* National Bureau of Economic Research.

of surplus. The inclusion of these items is desirable, in following changes in the actual purchasing power of industrial groups. The summary of these estimates indicates a drop of approximately 53 per cent between 1929 and 1933 in the actual money receipts of those receiving incomes from manufacturing industries, a decline of 32 per cent in the purchasing power of such receipts, in wholesale markets, and of 38 per cent in terms of articles entering into the average workingman's budget.[23] These figures are not comparable, in detail, with those previously cited, but they indicate declines of somewhat similar magnitudes. We shall be reasonably safe in concluding, from these several sets of figures, that the depression reduced the purchasing power of those deriving incomes from manufacturing industries by from 30 to 40 per cent. (The lowest month of the depression would show a greater drop.) This means that the stream of physical goods (consumption goods and articles of capital equipment) and services produced to meet the demands of this group was reduced about one-third. This was roughly equal to the decline in the aggregate purchasing power of primary producers, an equality that is not altogether a coincidence.

SUMMARY:
CHANGES IN FABRICATIONAL MARGINS DURING RECESSION

In its general outlines the history of the changes in manufacturing costs between 1929 and 1932–33 is simple, paralleling experience during earlier recessions. We start in 1929 with a condition of relatively high fabrication costs, relatively low material costs. In spite of increasing productivity during the preceding decade, labor costs and overhead costs plus

[23] The purchasing power of income paid out by manufacturing industries, in terms of articles entering into the cost of living, was lower in 1932 (41 per cent below 1929) than in 1933.

profits per unit of manufactured product remained fairly high, as compared with pre-War levels. As in most recessions, the impact of forced liquidation in 1929 was felt most severely in raw material markets. Special circumstances, notably large world supplies of raw materials and the depressing effect on raw material producing debtor countries of the almost complete stoppage of international lending, accentuated the force of liquidation among primary products.

Tardy deflation of manufacturing costs was to be expected, then. The susceptibility of raw materials to fluctuations in the sales of finished products and the presence of peculiarly inflexible elements in the costs of fabrication both contribute to such tardiness. In 1929 there were special conditions contributing to delay the downward readjustments of manufacturing costs, just as there were exceptional circumstances intensifying the usual weakness, during recession, of raw materials. The persistence, for almost the decade preceding, of a fairly stable price level led to a general reluctance to cut costs, in the belief that the price drop was temporary and that the previous level would shortly be restored. Furthermore, heavy capital investments during the preceding decade had added to the weight of overhead expenses (a notably inflexible element of cost) while pricing practices in many business fields had contributed to the development of rigid prices.

The uneven character of the ensuing price decline was a natural consequence of these conditions. During the first twelve months of recession (beginning in July 1929) raw producers' goods fell 19 per cent in price; all processed goods fell but 9 per cent. During the next twelve months raw producers' goods declined 22 per cent; all processed goods dropped 12 per cent. During the third twelve months raw producers' goods fell 14 per cent; all processed goods dropped 9 per cent. The rate of expansion of the raw-processed differential was definitely diminishing in the third year, as old

rigidities were broken and established prices were finally feeling the force of liquidation.

This phenomenon of price disparity is not a novel feature of a business depression. Inequalities of price movement characterize all periods of recession and depression. But in magnitude, persistence and devastating effects the price disparities opened up during the recession and depression of 1929–33 stand almost alone. An economic system probably less able than at earlier times to adapt itself readily to drastic changes was exposed to disruptive forces of exceptional strength, and a condition of almost unprecedented difficulty resulted. The necessary adaptations to this changed situation, fundamental financial and physical readjustments of which price readjustments were but the manifestation, were difficult to accomplish. Pending their accomplishment, the economic system operated at a low level of efficiency.

The reasons for the low efficiency of the economic system after a period of sharp recession are many, more than we may explore here. But one important consequence of price disparities (and of the disparate financial and physical conditions that lie behind price phenomena) we must note—the inevitable reduction in the volume of intergroup trade. We found clear evidence of this in the declines observed in the aggregate purchasing power of primary producers and agents of fabrication. The physical volume of goods that could be purchased with the money incomes received by each of these groups dropped one-third, or more, between 1929 and 1933. The price changes experienced by the two groups were widely different, as were also the reductions in physical volume of output. But the interdependence of their fortunes is clearly indicated by the approximate equality of the losses suffered in physical income.

Prices and Volume of Production of Capital Equipment and Building Materials During Recession

In following the prices of articles entering into capital equipment during the pre-recession period we have noted the continuing high prices for capital goods. An era of remarkable expansion in the investment of capital funds and in the construction of capital equipment was marked by the persistence of high capital costs. Low material prices and rapidly increasing productivity provided American industry with the advantage of low operating costs during the long period of prosperity prior to 1929. But on the capital side a large volume of new equipment and a great number of new plants were being built at high cost. These high costs set no immediate obstacle to profits during the heyday of prosperity, but they rose to plague American business when the pangs of readjustment set in.

In considerable part such readjustment of high capital charges during and after a period of liquidation is a problem of finance. We do not here examine that aspect of the matter in detail. But the problem of stimulating new investment and of initiating activity in the capital goods industries during recovery is in some part a price problem.

The changes during the recession in the prices of goods intended for use in capital equipment are defined by the accompanying index numbers. Building materials, which are an important element of capital costs as well as an item in the cost of durable consumers' goods, are represented by a

	WHOLESALE PRICES		PER UNIT PURCHASING POWER
	July 1929	*February 1933*	(*July 1929=100*) *February 1933*
Producers' goods for use in capital equipment, processed	100	79	127
Building materials	100	76	123
All commodities	100	62	100

separate index. While the general average of wholesale prices was declining 38 per cent, between July 1929 and February 1933, processed goods intended for use in capital equipment declined 21 per cent; building materials dropped 24 per cent. The real worth of these goods in exchange for general commodities at wholesale gained, correspondingly, by some 25 per cent. Here was an important barrier to the resumption of normal activity in the heavy industries.[24]

At the peak of prosperity in 1929, as we have seen, capital equipment of all sorts was relatively high priced. Pressure

[24] We have pointed out above that processed goods destined for use in capital equipment are not necessarily finished goods. But it is certain that the ultimate finished goods of this class experienced smaller price declines than did the commodities included in this index. The index overstates the decline in the average prices of all types of finished capital goods.

A bias in the same direction is present in the figures relating to changes in steel prices during recession, because of the rigidity of freight rates. The Federal Trade Commission, in its report on the steel code, states that on the average realized steel prices are higher than the basing-point prices which are used in current index numbers.

Let p_0=steel price in base year
p_1=steel price in given year
f_0=freight charges in base year
f_1=freight charges in given year

Then $\frac{p_1+f_1}{p_0+f_0}$=the 'realized price' relative

We use $\frac{p_1}{p_0}$=the 'basing-point price' relative

Since $\frac{f_1}{f_0} > \frac{p_1}{p_0}$ (when prices decline, because of the rigidity of freight rates)

Then $\frac{p_1+f_1}{p_0+f_0} > \frac{p_1}{p_0}$

That is, the 'basing-point price' relative is smaller (showing a greater decline) than the 'realized price' relative. Thus, barring price-cutting and contract sales at prices below current quotations, published changes in steel prices *overstate* the actual decline in prices paid by purchasers of steel.

from the demand side towards lower prices was not strong, and conditions of supply tended to maintain high costs. Special circumstances in the building industries worked to the same end. We should take account of this fact in appraising the price changes of recession. A longer perspective for the study of recent movements is provided by index numbers on a pre-War base. The relative positions of the two capital

	WHOLESALE PRICES				PER UNIT PURCHASING POWER AT WHOLESALE			
	1913	*1922*	*July 1929*	*Feb. 1933*	*1913*	*1922*	*July 1929*	*Feb. 1933*
Producers' goods for use in capital equipment, processed [1]	100	165	161	124	100	111	107	134
Building materials [2]	100	172	169	128	100	124	122	150

[1] This index includes building materials; that previously presented, showing the decline from July 1929 to February 1933, did not.

[2] The index of building material prices is that of the U. S. Bureau of Labor Statistics for 1913–29. For the period following 1929 the index is one constructed by the National Bureau of Economic Research. In reducing wholesale prices of building materials to terms of purchasing power, a deflator was secured by splicing the general wholesale price index of the National Bureau of Economic Research to that of the Bureau of Labor Statistics, on the 1913 base, at 1929.

equipment groups are best indicated by the purchasing power measurements in the right hand column of the table. The substantial price advantages enjoyed by sellers of capital equipment and building materials in 1922 had been reduced somewhat by 1929. Thereafter, the retarded declines of these goods during the recession resulted in further advances in their per unit worth, in terms of other commodities. In February 1933 such goods were worth from one-third to one-half more, in terms of all commodities, than in 1913.

This situation is the more striking in comparison with the relatively low prices prevailing at the early stages of the productive-distributive process. The preceding chapter pre-

sented a general account of this condition, showing the persistence of low prices of materials, relatively high fabrication costs and relatively high prices of manufactured goods. The present evidence, relating to one important class of finished goods, confirms this. In the markets for capital equipment prices were high prior to the recession, and this condition became much more pronounced during the period July 1929–February 1933.[25]

The existence, at the end of a phase of price recession, of relatively high prices for articles entering into capital equipment is a post-War phenomenon for which there is little precedent in earlier economic experience. From 1907 to 1908, when all commodities at wholesale declined 7 per cent in price, processed goods intended for use in capital equipment dropped 12 per cent. This record may not be taken as representing a 'normal' reaction, but relative changes of this order were closer to the general pre-War experience than were the movements occurring after 1920. In this earlier experience a check to demand for new capital goods was to be expected even before the peak of prosperity; thereafter both output and prices fell; mid-depression found relatively low prices and low production. The prompt revival of demand and early recovery among industries producing capital

[25] The following index numbers, defining changes in the wholesale prices of raw producers' goods intended for use in capital equipment are notably lower than the measurements relating to processed goods of the same general type, as cited in the preceding table. The two sets of index numbers are not precisely comparable, as to constitution, but their movements are broadly representative of the changes in prices of basic materials, in raw form, and the prices of more highly fabricated goods entering into capital equipment. The final figure given below shows raw materials of this type to have been 23 per cent lower in price in February 1933 than in 1913, while the corresponding measure for processed goods was 24 per cent above the 1913 level.

1913	*1922*	*July 1929*	*February 1933*
100	137	135	77

equipment that were thereby stimulated constituted one of the major forces contributing to general economic recovery. Against this background of more or less conventional cyclical behavior the relatively high prices of capital equipment during the 1921–22 revival and their recalcitrance after the 1929 recession were unexpected and disturbing.

CONSTRUCTION COSTS

The indexes of building material prices given in the preceding tables do not by any means represent all construction costs, even in building construction alone. Labor costs are another important item. Changing technical methods, leading to alterations in the efficiency of construction work, also affect actual construction costs. In Table 7 we supplement the above account by a summary record of certain additional measurements, rather broader in scope, of construction costs during the period prior to the recovery of 1933–35. The expected lag of the usually more rigid elements of capital costs is found, in recession. Wholesale commodity prices fell 32 per cent, from 1929 to 1932; the various indexes of construction costs show declines ranging from 10 to 26 per cent.

While these changes were occurring, the physical volume of construction of all sorts, as measured by indexes of the National Bureau of Economic Research, declined approximately 52 per cent. This drastic decline in the volume of construction is related, of course, to the lagging adjustment of construction costs to changing monetary values and to the concurrent drop in the total national income. Total national income paid out, in current dollars, dropped some 40 per cent between 1929 and 1932. Even if no other factors had been operative, the discrepancy between the declines in national income and in construction costs would have entailed a reduction in volume of construction. Added to this, of

TABLE 7

CONSTRUCTION COSTS IN THE UNITED STATES, 1913–1932

	A		B		
	1929	*1932*	*1913*	*1929*	*1932*
General construction [1]	100	76	100	207	157
Building construction, actual costs [2]	100	74	100	185	136
Railroad construction [3]	100	82	100 [6]	160	131
Utility systems [4]					
Water works	100	85	100	180	153
Electric light	100	80	100	178	142
Street railway	100	85	100	170	144
Natural gas	100	90	100	184	166
Artificial gas	100	86	100	183	157
Wholesale prices, all commodities [5]	100	68	100	136	93

[1] Index of *Engineering-News Record.* This index has four components, of which three are prices of materials (structural steel at Pittsburgh, cement at Chicago and lumber at New York) and one is wages (average wage for common labor in 20 cities).

[2] Index of Turner Construction Company, N. Y. This index is based on actual costs encountered on Turner building construction work. The following factors have been taken into account: labor rates; prices of materials; productivity of labor; efficiency of plant and management.

[3] Index of Railroad Construction Costs of the Engineering Section, Bureau of Valuation, Interstate Commerce Commission. This is an index of accounts, including such items as grading, tunnel excavation, bridges, developed from analysis of major construction contracts.

[4] Index numbers of C. F. Lambert showing the current cost of construction of five utilities:

Water works: 25 systems, 68 items — Street railways: 10 systems, 82 items
Electric light: 25 systems, 84 items — Natural gas: 15 systems, 58 items
Artificial gas: 25 systems, 63 items

[5] Index of U. S. Bureau of Labor Statistics. [6] 1910–14=100.

course, is the notable elasticity of demand for the capital equipment and durable consumption goods that make up the total volume of construction. Economic stress always brings intensified declines among these goods.

Comparison of these various measurements on a pre-War base provides evidence of still more notable shifts (see sec-

tion B, Table 7). It is natural that the several indexes of construction costs should differ more widely among themselves, when changes over twenty years are compared. Significant in this comparison is the fact that the index numbers of actual building costs and of railroad construction costs, which are directly affected by changing technical methods and by resulting gains in productivity, are substantially lower than the general index of construction costs, which is derived from the prices of basic materials and wage rates. The former are more accurate indexes of changes in the actual costs of construction work. From these it appears that such costs, in 1932, were from 30 to 40 per cent higher than in 1913. But even these are far removed from the index of wholesale prices, which in 1932 was 7 per cent below the 1913 level. Construction costs stand with the costs of capital equipment in general, in this respect. During the whole post-War era they were out of line with commodity prices. When the favorable, perhaps fortuitous, circumstances that made possible rapid expansion of construction between 1922 and 1929, in spite of high costs, ceased to prevail, a heavy reduction in volume was inevitable. With recession still greater disparities developed. Building and capital creation generally were excessively expensive undertakings at the low point of the depression. The price difficulties standing in the way of new investment were materially greater than during the preceding prosperity, when other conditions were more favorable to activity in this field.

Price Changes Among Consumers' Goods During Recession

The period of post-War expansion that ended in 1929 was marked, as we have seen, by relatively low prices of raw materials and by high fabricational margins. The first of

these conditions tended to lower prices to consumers, the second, which was the stronger, to increase them. During the decade following the War the prices of consumers' goods were persistently high, relatively to earlier standards. Reference has been made to certain fortuitous circumstances—the reaping of high speculative profits, the expansion of consumer credit, and the maintenance of foreign sales through heavy American lending—without which such relatively high prices to consumers might well have checked the flow of goods long before 1929. We turn to the record of recession among consumers' goods with this background in mind.

The next table shows the net changes in the prices and purchasing power of consumers' goods, at wholesale, in comparison with the movement of general wholesale prices, after forty-three months of price decline. The decline in the aver-

	WHOLESALE PRICES		PER UNIT PURCHASING POWER (*July 1929=100*)
	July 1929	*February 1933*	*February 1933*
Consumers' goods, all	100	64	104
Raw	100	56	91
Processed	100	66	108
All commodities	100	62	100

age wholesale price of consumers' goods, normally sluggish in their reactions to changed business conditions, was almost as great as that in the general price index—36 per cent as against 38 per cent. The smallness of the difference is attributable in part to the influence of raw consumers' goods, that is, goods such as eggs, milk, fruits and vegetables which are ready for final sale without processing. Average prices of these commodities suffered a more severe decline than did processed consumers' goods. The shifts that these declines brought, with reference to the average value of all commodities at wholesale, are shown by the measurements of per unit purchasing power. Consumers' goods, on the average, in-

creased 4 per cent in relative worth during the recession. Raw consumers' goods lost 9 per cent, while processed consumers' goods gained 8 per cent in real worth.

Referring these changes to an earlier base, we have the measurements given below. All consumers' goods and the two

	WHOLESALE PRICES				PER UNIT PURCHASING POWER			
	1913	*1922*	*July 1929*	*Feb. 1933*	*1913*	*1922*	*July 1929*	*Feb. 1933*
Consumers' goods, all	100	155	161	104	100	104	108	112
Raw	100	154	172	96	100	104	115	104
Processed	100	155	159	106	100	104	106	115
All commodities	100	148	150	92	100	100	100	100

subdivisions shown were consistently higher in price than the average of all commodities, during the entire post-War period. In 1922 these groups showed a uniform 4 per cent advantage, with reference to 1913 relations. By July 1929 this had increased to 8 per cent for the general group of consumers' goods; raw consumers' goods had risen to higher levels than processed goods. The recession increased the advantage of processed consumers' goods and reduced that of raw consumers' goods. But in February 1933, at the low point of the depression, both groups were above the 'all commodities' average, and the per unit real worth of consumers' goods as a broad class was 12 per cent greater than in 1913.

Further evidence relating to the depression level of prices to consumers is provided by the following index numbers.[26]

	PER UNIT PURCHASING POWER AT WHOLESALE					
	July 1929	*Feb. 1933*	*1913*	*1922*	*July 1929*	*Feb. 1933*
Processed consumers' goods	100	108	100	104	106	115
Foods	100	96	100	95	102	98
Non-foods	100	119	100	117	111	132

[26] The price index numbers from which these measurements are derived are given in Appendices III and IV.

Among processed consumers' goods non-foods were responsible for the high relative prices prevailing both before and after the recession. Food products ready for consumption remained close to the general average of commodity prices, while non-foods among consumers' goods have been consistently above that average. At the low point of the depression the real worth, per unit, of processed non-foods ready for use was 19 per cent greater than in July 1929, 32 per cent greater than in 1913. Here was a major element in the high prices prevailing at the terminal stage of the productive-distributive process.

VARIATIONS IN LIVING COSTS AND RETAIL PRICES

The quotations used above, in discussing prices paid by consumers during recession, have been drawn from wholesale markets. They should be supplemented by a record of price changes at retail. Available data in this field are far from satisfactory, with respect to both accuracy and coverage. Indeed, the degree of variation among retail quotations and the absence of standardization among commodities marketed render it impossible to follow price changes at retail with the accuracy possible in the tracing of changes in wholesale prices. Index numbers for some scattered series are brought together below, for comparison with wholesale price measurements.[27]

[27] The cost of living index is that of the U. S. Bureau of Labor Statistics, with interpolations based on the index of the National Industrial Conference Board. The index numbers of retail food prices are also compiled by the Bureau of Labor Statistics. The index number of retail prices of clothing and home furnishings is constructed by Fairchild Publications; the Bureau of Agricultural Economics is responsible for the index of prices paid by farmers. The index numbers of consumers' goods and of all commodities at wholesale are computed by the National Bureau of Economic Research (see Appendices III and IV). It should be noted that the wholesale price

	July 1929	*Feb. 1933*	*1913*	*July 1929*	*Feb. 1933*
Cost of living, industrial wage earners	100	74	100	174	128
Retail food prices	100	58	100	169	97
Retail prices of clothing and home furnishings, in large department stores	100[1]	59			
Prices paid by farmers	100	66	100	151	100
Consumers' goods at wholesale	100	64	100	161	104
All commodities at wholesale	100	62	100	150	92

[1] October 1929=100.

During the general recession of prices from July 1929 to February 1933 the downward movement of prices paid by farmers paralleled the decline in all consumers' goods, at wholesale. Retail food prices and the prices of clothing and furnishings in large department stores declined more sharply. (The index of prices in department stores probably overstates the degree of decline in the prices of clothing and home furnishings in the country at large. Sacrifice sales during depression and rapid turnover of stock in department stores facilitate a more rapid reduction of prices than occurs among retail outlets generally.) But if we take account of all items in the household budget of the average industrial worker, including rent, we find a much less rapid decline. Living costs for industrial workers dropped some 26 per cent during the recession, as against declines of 38 per cent in all wholesale prices, and 36 per cent in the wholesale prices of consumers' goods.

More marked are the differences when recession prices are referred to a pre-War base. Retail food prices dropped to about 3 per cent below the pre-War level. Prices paid by farmers fell to precisely the 1913 level. Living costs for industrial workers stood, at the February low, 28 per cent above the 1913 level.

index of the Bureau of Labor Statistics, on a pre-War base, is lower than that of the National Bureau. The Bureau of Labor Statistics index for July 1929, on the 1913 base, is 138; for February 1933 it is 86.

We lack a comprehensive index of changes in the prices actually paid for goods by final consumers as a broad class. If we had such an index its movements would probably be closer to those of the industrial wage earner's cost of living index than to the specific retail price series. Many items in the average consumers' budget are sluggish in their price movements, slow to adapt themselves to the general price changes that occur during business expansion and recession. The contraction in the volume of goods marketed during depression reflects, in part, this lagging price readjustment in the face of sharp decreases in the wage, dividend and other disbursements to final consumers.

The situation at the low point of the depression was thus marked by relatively low prices in the markets to which primary producers come as sellers, by high prices in the markets to which consumers come as buyers. It is the prices in the latter markets, at the terminus of the entire elaborate process of production and distribution, that determine just how far effective purchasing power may go in moving goods. In the absence of offsetting factors such a condition would tend to clog the stream of trade and reduce the volume of goods that could be produced and sold.

PRICES OF CONSUMERS' GOODS AND CONSUMER PURCHASING POWER

The various records surveyed indicate that the consumer was adversely affected by the price changes during recession. In general, the prices of goods ready for consumption fell less than did the average of all commodity prices. But the real changes in the position of consumers are not accurately reflected in the fluctuations of any such general index of the prices of consumers' goods, whether at wholesale or retail. The unit prices of goods are of central interest to the pro-

ducer who is buying and selling. Indeed the operation of the entire economic system is dependent upon the existence of suitable unit price relations at the various stages of the productive-distributive process. But the fortunes of consumers at large are to be measured with reference to the buying power of aggregate income, rather than in terms of the average price, per unit, of consumers' goods. It is now in order to bring together material relating to the aggregate purchasing power of consumers as a general class, during the recession, summarizing, at the same time, data for special groups previously presented. In doing this we must deal with annual values, taking 1929 as the peak year of prosperity, 1932 and 1933 as the low years of the depression. (National income was slightly lower in 1933 than in 1932.) Records of changes in the aggregate amounts of income paid out are given in Table 8.

The variations in the record of decline, for different classes of income, are notable, but our immediate concern is with the total. We have here a drop, between 1929 and 1933, of approximately 43 per cent. In comparison with the decline in this aggregate of money income paid out, the records of changes in the prices of consumers' goods have particular significance. In making this comparison we should have an index based upon comprehensive records of the prices actually paid by consumers at large for the goods and services they buy; this would make possible an accurate estimate of the change in the aggregate purchasing power of consumers. In default of such an index we may use the accompanying approximation. This index has been secured by averaging index numbers of living costs for industrial wage earners, prices paid by farmers for commodities used in family main-

	1929	*1932*	*1933*
Estimated prices of goods purchased	100	80	76

TABLE 8

NATIONAL INCOME PAID OUT, BY TYPES OF PAYMENT, 1929–1933 [1]

	Percentages of 1929		
	1929	*1932*	*1933*
Salaries (selected industries)	100.0	59.8	53.8
Wages (selected industries)	100.0	40.8	41.8
Salaries and wages (all other industries)	100.0	70.1	63.5
Total labor income	100.0	60.1	57.1
Dividends	100.0	46.2	37.0
Interest	100.0	97.5	90.0
Total property income	100.0	71.1	62.1
Net rents and royalties	100.0	42.9	36.4
Entrepreneurial withdrawals	100.0	63.9	58.4
Total entrepreneurial income	100.0	59.4	53.7
Total income paid out	100.0	61.5	57.2

[1] See Table 58, Ch. VIII, for the data upon which these percentages are based. The basic figures are estimates jointly prepared by the U. S. Department of Commerce and the National Bureau of Economic Research. Cf. *Survey of Current Business*, July 1936; "National Income, 1929–1932", by Simon Kuznets, *Bulletin 49*, National Bureau of Economic Research. (Explanations of the entries and of the limitations attaching to various income estimates appear in the latter publication.)

tenance, and prices of capital equipment and construction.[28]

Correcting by this index the figures measuring changes in total income paid out, we estimate a decline from 1929 to 1932 of 23 per cent in the aggregate purchasing power of the national income paid out; from 1929 to 1933 the estimated decline was 25 per cent. There is, of course, a margin of error in these estimates, but it is safe to say that the actual decline between 1929 and 1932–33 in the volume of goods and services that could be purchased by income recipients, at prevailing prices, approximated 25 per cent.[29]

[28] With weights of 8, 1 and 1, respectively.

[29] The decline in total production in the United States between 1929 and 1932 came to some 36 per cent; to 1933 the drop was 33 per cent. The figure of 25 per cent given in the text relates to the sale of goods and services to

These general estimates of the loss in consumer purchasing power during the depression may be made somewhat more accurate for two groups of consumers, farmers and industrial wage earners. For these groups (whose real annual incomes reached depression lows in 1932) we have reasonably accurate records of changes in aggregate money income and in the average price paid for goods bought. Measurements for agricultural producers, given in an earlier section, are summarized below.[30] The situation among farmers was in all

	1929	*1932*
Gross income of farmers	100	45
Prices paid by farmers	100	70
Aggregate purchasing power of farmers	100	64

respects blacker than among consumers generally. As a net result of declining gross income and of reduced buying

those classed as income recipients. It does not include intermediate merchandising transactions.

A very large proportion of 'income paid out' is expended for consumers' goods. During a severe recession the proportion so expended undoubtedly increases, at the expense of the amounts saved. Such a shift would mean that the drop in sales to consumers would be less than the figure measuring the decline in total production, while the reduction in the sales of capital goods would be correspondingly greater. Among consumers' goods, similarly, the drop in the sales of perishable goods would be less than the drop in durable goods.

[30] The original data were compiled by the Department of Agriculture; see *Yearbook of Agriculture*, 1935. The relative for farm gross income, as given above, includes the farm value of products consumed by farmers and their families, in addition to cash received for products sold. The value of products retained for consumption was estimated at $1,524,000,000 for 1929, $960,000,000 for 1932. In estimating changes in the aggregate purchasing power of farmers, aggregate gross income has been deflated by the index of prices paid by farmers. A slightly more accurate estimate would be secured if aggregate *cash* income were so deflated, and if there were added to the purchasing power figure thus secured an increment representing products retained for consumption on the farm. This procedure would raise the index of aggregate purchasing power of farmers in 1932 from 64 (on the 1929 base) to 65.

prices, farmers suffered a loss of some 36 per cent in aggregate purchasing power.

Changes in the actual living conditions of farmers are not measured, of course, by records of shifts in gross income. If we subtract from the gross returns of farmers all production expenses we have a remainder, representing cash available for family maintenance, that suffered a much more severe decline during the recession. On the positive side, however, account should be taken of farm products consumed on the farm, a relatively constant factor of considerable importance in maintaining the farmer's standard of living. If we combine the purchasing power of the cash available to farmers for family maintenance with the actual physical returns in the form of farm products consumed on the farm, we have a means of estimating changes in the real income of farmers' families. The loss between 1929 and 1932, on this basis, probably approximated 40 per cent.[31]

The changing fortunes of industrial workers are shown by the following measurements.[32] Here is an even sharper drop.

	1929	*1932*
Total pay rolls of wage earners in manufacturing establishments	100	43
Cost of living of industrial workers	100	81
Aggregate purchasing power of wage earners in manufacturing establishments	100	53

[31] Farmers were able to keep their losses within this limit only by drawing upon their capital. It is estimated by the Bureau of Agricultural Economics that depreciation charges on farms, in 1932, exceeded current capital expenditures by over 500 million dollars. In 1931 deferred replacements of the same type amounted to approximately 300 million dollars. (These figures and others cited above are given in *Crops and Markets,* July 1935, pp. 271–2.)

[32] The data of pay rolls are compiled biennially by the Census of Manufactures. Interpolation for the year 1932 has been based upon pay rolls of the comprehensive sample of manufacturing industries covered by the U. S. Bureau of Labor Statistics. The index of cost of living is that of the Bureau of Labor Statistics.

Cost of living lagged behind the drop in total receipts of wage earners, with the result that the aggregate purchasing power of manufacturing wage earners fell 47 per cent between 1929 and 1932.

An index of the net income of wage earners in mining, manufacturing, construction, steam railroads, Pullman, railway express and water transportation has a value of 41 in 1932, 1929 being 100 (see *Survey of Current Business,* July 1936, p. 16). Correcting this net income figure by the index of living costs, we secure an estimated index of 51 for aggregate purchasing power—a drop of 49 per cent from 1929 to 1932.

For these groups, in even more pronounced form than for consumers at large, the sharp decline in money income without corresponding declines in the prices of goods purchased brought drastic losses in their aggregate purchasing power; the consequent reduction in the demand for finished goods tended to reduce the sources of their incomes still further. Here is one segment of the vicious circle that is set up during a period of recession and liquidation.

Price Relations and Problems of Recovery

The manner in which a modern industrial economy reacts to the forces of recession depends partly upon the incidence of those forces, partly upon the attributes of the various elements of the economy thus exposed to strains of readjustment. The active push that impels readjustment may come from different quarters at different times, and differences of origin will be reflected in the statistical records of different periods of recession. Such differences lead to departures from uniformity among recession movements. Perhaps more important, to the student of cyclical movements, are the modes of reaction of various economic elements to the forces of

recession. Similarities in the behavior of important elements at different times would tend to create a pattern, even though there were no uniformity in the initiating forces. The historical record yields evidence of such similarities in behavior, in cycles widely different in time, space and attendant circumstances. But here again a factor of variation is introduced by secular change in the attributes of economic elements. Important variations in behavior may be due to such structural changes, representing differing responses rather than differences in the forces at work.

As a background for the study of the price recession of 1929–33 we have sketched the movements of a preceding period. Among these movements some were noted that tended to alter the attributes of the price system, and thus to affect its behavior under the stress of a major recession. The detailed record of the recession, as given in this chapter, represents the resultant of a composite of varied forces and conditions. We may not clearly disentangle movements due to the pressure of specific forces from shifts representing differing capacities for readjustment under stress. But in seeking to understand the changes occurring during the years 1929–33 it will be well to think in terms of the structural modifications brought by the twenty preceding years.

Four years of recession created a price situation at the beginning of 1933 that was marked by certain outstanding characteristics. Prices to consumers of finished goods were high, relatively to the prevailing price level; prices of raw materials, on which the incomes of important consuming groups depend, were very low. Prices received by producers of agricultural products, in particular, were seriously depressed, while the prices paid by farmers for goods needed for production and for family maintenance were high. Low prices of industrial raw materials, together with relatively high prices for finished goods, put manufacturers in an

advantageous position on the operating side. This price advantage, of course, failed to yield a corresponding reward in the form of real income as long as the volume of production and sales remained unusually low, but it offered attractive potential profits. On the investment side, however, there prevailed relatively high prices for goods entering into capital equipment and for building materials. This circumstance, with others, tended to restrict activity in industries producing capital goods. A factor that has in the past served to stimulate revival from depression was thus reduced materially in potency.

Certain of the problems of recovery centered about these conditions: How was the flow of goods to consumers to be stimulated with the real value of raw materials so low, in comparison with earlier standards, and the real value of consumers' goods so high? How was activity in industries producing capital goods to be restored, with production and sales of finished goods low in volume and with the costs of new equipment high, relatively to the value of commodities in general?

With respect to the first of these problems three alternatives existed, on the price side (with corresponding adjustments, of course, in the physical processes of production and consumption): (1) resumption of activity under the then existing conditions—low prices for raw materials and relatively high prices to consumers; (2) continued liquidation of finished goods until something approaching pre-recession parity with raw materials was restored; (3) restoration of more satisfactory terms of exchange between raw and finished goods through advances in the prices of raw materials, rather than through further liquidation of manufactured goods.

Of these alternatives the first, a resumption of activity under the price conditions existing at the low point of the depression, was not impossible. A modern economic system

does not function under one rigorously prescribed set of conditions; it may adapt itself to a variety of situations. However, with a gap as wide as that prevailing in the winter of 1932–33 it was highly improbable that working relations among economic elements could be restored on the basis of existing price conditions. The modes of using productive resources, investments of capital, the economic distribution of man power were not adapted to the price relations that prevailed after four years of deep disturbance. Radical shifts in the distribution of income and enduring changes in the status of economic groups would have been entailed, changes more profound and disturbing than would have been accepted without continuing social unrest. The restoration of price relations closer to those prevailing earlier, a restoration to be effected through continued liquidation of prices still substantially above the average or through the raising of the most seriously depressed prices, seemed to be an essential condition of economic recovery. The second problem, on its price side, reduced to a similar question: could the prices of goods entering into capital equipment be brought more closely into line with other prices, either through raising the latter or reducing the prices of capital goods and building materials?

It is helpful to think of the problems of recovery in terms of these general price relations, but emphasis should also be placed upon the specific character of the price relations and profit opportunities that actually motivate the decisions of business men. No man decides whether he should open his factory, or increase his output, or embark upon a new line of activity after comparing general index numbers of the prices of raw and processed goods. The price and cost relations and the market opportunities upon which judgments are based are particular relations and opportunities, involving individual commodities and particular markets. No index num-

bers of average prices can define the host of specific situations that confront the thousands of individual business men whose decisions determine the course of economic events. A given person may find a particular situation favorable for profitable activity when the general outlook is blackest. Indeed, the price disparities that work to the disadvantage of some economic groups may be offering new opportunities to others. Declining material prices lower the incomes of primary producers; they reduce production costs to manufacturers. Always, the key to an economic situation lies not in the general relations defined by gross index numbers but in the innumerable relations between specific buyers and specific sellers.

The justification for using index numbers and for thinking in terms of general relations, in spite of the specific character of the situations that actually affect business judgments, is two-fold. We do not have and cannot secure detailed information about countless specific relations. Moreover, such averages as we have are fairly reliable guides to the situations that confront the majority of business men. Single swallows do not make summers; isolated profit opportunities may be highly important in creating little centers of recovery, but the factors affecting the great tides of business change may be defined with reasonable precision by the available averages. This is the chief justification for basing our reasoning on general movements and average relations. But it is the part of wisdom to remember that behind these averages, often defying them, are countless men, working under adverse conditions to discover or develop little areas of strategic advantage. These are the energizing factors in business recovery.

The problems of recovery in 1932 and 1933 ramified, of course, far beyond the markets in which buying and selling prices were set. Conditions of production affecting each com-

modity group were involved. Wages, overhead charges and all other elements of production costs were highly relevant factors. Changes in productivity and their various possible effects on prices and on the distribution of income were important elements of the situation. The volume of income and of potential purchasing power available to the various producing and consuming groups, and the willingness to make use of such purchasing power, entered into the tangled problems of readjustment. Subsequent chapters will be concerned with the events of revival and the course of recovery among particular elements of this complex situation.